

AMENDMENTS TO THE CLAIMS

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1. (currently amended) A method for operating and lubricating hydraulic systems at pressure of about 4000 psi by employing as a hydraulic fluid a phosphate ester functional fluid comprising a major amount of fire resistant phosphate ester base stock and a minor effective amount of additives comprising one or more perfluoroalkyl sulfonic acid or perfluorocycloalkyl sulfonic acid, and salts of the same, anti erosion agent(s), one or more monoepoxide acid scavenger(s) and one or more viscosity index improver(s).

2. (original) The method of claim 1 wherein the hydraulic system is operating at a pressure of about 5000 psi or higher.

3. (original) The method of claim 1 or 2 wherein the phosphate ester hydraulic fluid base oil comprises a mixture of tri alkyl phosphate, di alkyl aryl phosphate, alkyl diaryl phosphate, and triaryl phosphate.

4. (original) The method of claim 3 wherein the dialkyl aryl phosphate and alkyl diaryl phosphate are selected from dibutyl phenyl phosphate, butyl diphenyl phosphate, diisobutyl phenyl phosphate, isobutyl diphenyl phosphate.

5. (original) The method of claim 1 or 2 wherein the phosphate ester hydraulic fluid base oil comprises tri alkyl phosphate and tri aryl phosphate.

6. (original) The method of claim 5 wherein the tri alkyl phosphate is a mixture of tri iso butyl phosphate and tri-n-butyl phosphate.

7. (original) The method of claim 6 wherein the tri iso butyl phosphate constitutes about 30 to 80 wt% of the base stock, the tri n-butyl phosphate constitutes about 20 to 60 wt% of the base stock and the tri aryl phosphate constitutes about 3 to 15 wt% of the base stock.

8. (original) The method of claim 5 wherein the trialkyl phosphate is tri isobutyl phosphate.

9. (original) The method of claim 5 wherein the trialkyl phosphate is tri n-butyl phosphate.

10. (original) The method of claim 5 wherein the triarylphosphate is tri (isopropyl phenyl) phosphate, tri (tert-butyl phenyl) phosphate, or a mixture of the two.

11. (original) The method of claim 1 or 2 wherein the fluid further contains one or more of an effective amount of a rust inhibitor or mixture of rust inhibitors and an effective amount of an antioxidant or a mixture of antioxidants.

12. (original) The method of claim 8 wherein the fluid comprises a major amount of a fire resistant phosphate ester base stock and a mixture of additives comprising

from 2 to 10 wt% active ingredient, based on the total fluid, of a viscosity index improver,

from 4 to 10 wt%, based on the total fluid, of an acid control additive,

from 0.01 to 0.15 wt%, based on the total fluid, of an erosion inhibitor,

from 0 to 1.0 wt%, based on the total fluid, of one or more rust inhibitors,

from 0 to 3 wt%, based on the total fluid, of one or more antioxidants.

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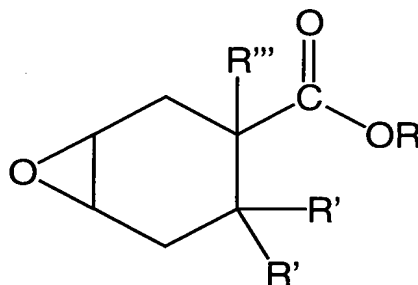
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13. (new) The method of claim 3 wherein the trialkyl phosphate is tri n-butyl phosphate.

14. (new) The method of claim 3 wherein the trialkyl phosphate is triisobutyl phosphate.

15. (new) The method according to claim 11 wherein the antioxidants can be aminic or phenolic or a mixture of the two.

16. (new) The method of claim 12 wherein the acid control additive is of the formula



wherein R is selected from the group consisting of an alkyl group of from 1 to 10 carbon atoms optionally containing from 1 to 4 ether oxygen atoms therein and cycloalkyl of from 3 to 10 carbon atoms, each R' is independently selected from the group consisting of hydrogen, alkyl of 1 to 10 carbon atoms and -C(O)OR'' where R'' is alkyl of from 1 to 10 carbon atoms and 0 to 4 ether oxygen atoms therein or cycloalkyl of from 3 to 10 carbon atoms, and R''' is selected from the group consisting of hydrogen, alkyl of from 1 to 10 carbon atoms and -C(O)OR'' where R'' is alkyl of from 1 to 10 carbon atoms optionally containing from 1 to 4 ether oxygen atoms therein or cycloalkyl of from 3 to 10 carbon atoms.

17. (new) The method of claim 12 wherein the erosion inhibitor is a perfluoroalkyl or perfluorocycloalkyl sulfonic acid, or a metal salt of the same, or mixture of these sulfonic acid acids and metal salts, where the alkyl groups encompass 1 to 10 carbon atoms and the cycloalkyl groups from 3 to 10 carbon atoms.

18. (new) The method according to claim 12 wherein the viscosity index improver is a poly(alkyl acrylate) or poly(alkyl methacrylate) esters having a weight average molecular weight in the range from 45,000 to 100,000.

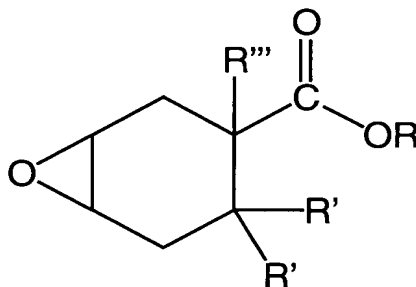
19. (new) The method of claim 3 wherein the trialkyl phosphate is a mixture of tri n-butyl phosphate and triisobutyl phosphate.

20. (new) A method for operating and lubricating hydraulic systems at pressure of about 5000 psi and higher by employing as a hydraulic fluid a phosphate ester functional fluid comprising:

a major amount of fire resistant phosphate ester base stock;

from 2 to 10 wt% active ingredient, based on the total fluid, of at least on poly(alkyl acrylate) or poly(alkyl methacrylate) ester having a weight average molecular weight in the range from 45,000 to 100,000;

from 4 to 10 wt%, based on the total fluid, of an acid control additive acid control additive of the formula



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wherein R is selected from the group consisting of an alkyl group of from 1 to 10 carbon atoms optionally containing from 1 to 4 ether oxygen atoms therein and cycloalkyl of from 3 to 10 carbon atoms, each R' is independently selected from the group consisting of hydrogen, alkyl of 1 to 10 carbon atoms and -C(O)OR" where R" is alkyl of from 1 to 10 carbon atoms and 0 to 4 ether oxygen atoms therein or cycloalkyl of from 3 to 10 carbon atoms, and R''' is selected from the group consisting of hydrogen, alkyl of from 1 to 10 carbon atoms and -C(O)OR" where R" is alkyl of from 1 to 10 carbon atoms optionally containing from 1 to 4 ether oxygen atoms therein or cycloalkyl of from 3 to 10 carbon atoms;

from 0.01 to 0.15 wt%, based on the total fluid, of a perfluoroalkyl or perfluorocycloalkyl sulfonic acid, or a metal salt of the same, or mixture of these sulfonic acid acids and metal salts, where the alkyl groups encompass 1 to 10 carbon atoms and the cycloalkyl groups from 3 to 10 carbon atoms;

from 0 to 1.0 wt%, based on the total fluid, of one or more rust inhibitors;
and

from 0 to 3 wt%, based on the total fluid, at least one of aminic or phenolic antioxidants.
